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ABSTRACT

It was generally hypothesized that two procedural deficiencies underlie the failure of most preschoolers to produce informative referential communications or to understand that ambiguous communications directed toward them are faulty. The first is a deficiency in understanding the difference rule (the fact that an informative message should describe the difference between a referent and other similar events with which it may be confused). The second concerns role combination (the fact that the roles of speaker and listener are complementary and that experience gained in one mode is relevant to performance in the other). It was expected (1) that if the child is taught the difference rule, role-switching will enhance transfer of speaking experience to listening, or vice-versa; (2) that difference-rule training alone should be successful intramodally but not cross-modally; and (3) that role-switching alone should have no effects. The design for testing these specific hypotheses involved orthogonal variation in the number of role-switching episodes children received and variation in the way they received difference-rule feedback training (in the speaking mode, the listening mode, or not at all). A total of 60 kindergarten children from two private schools were first tested on two stimulus discrimination tasks. One week after initial testing, subjects participated in similar speaking and listening tasks and evaluation tasks. Results are discussed. (RH)

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Developing referential communication skills:

The interaction of role-switching and difference rule training

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Abstract

Although both substantive knowledge and enabling skills are important to the development of referential communication, deficits in procedural knowledge may account for a significant portion of preschoolers' communicative failures. The results of this training study with 5-year-olds revealed that they lack two major procedural skills. They do not know the importance of differentiating referents from nonreferents. They also are unaware that the speaking and listening roles are, at least in part, complementary; that is, certain rules are applicable to both. After training which provided specific instruction on the nature of informative messages (in either the speaking or listening mode, but not both) and role-switching experience, performance improved both on tasks in the trained and in the nontrained modalities. Discussion focuses on both the practical implications and the theoretical significance of these results.

How a speaker directs a listener to differentiate an event from a potentially confusing context can vary across situations and across the life span. For example, pointing is an early and prototypic form of referential communication. Oral instructions on how to find one's way represent a developmentally more advanced form.

Characterizing the development of referential communication is not straightforward because it involves components whose development may not be parallel and whose interrelation is not yet known. We find it useful to make the following tripartite division of skills, although we recognize that there are other ways to cut the pie: One needs substantive knowledge regarding the events to be communicated about. A 3-year-old cannot tell a friend how to assemble a new toy if he himself does not know how. Enabling skills are also necessary. These may include vocabulary, perception, motoric ability, etc. For example, the English speaking visitor to Mexico City may have substantive knowledge regarding where he would like a taxi driver to take him, but may lack the Spanish vocabulary to produce a successful communication. Procedural knowledge is the final requirement. One must know the general rules to follow in communicating across various situations. (Our notion of procedural knowledge overlaps with what Flavell (1981) and others call metacommunicative knowledge. However, metacommunication includes the proviso that the child be conscious of rules whereas we require only that the child be able to perform in a manner that is consistent with rules.)

Shatz (1978), in discussing the development of communication skills, has suggested that young children know how to communicate, they just suffer more severe information processing constraints than adults. In terms of our

previous trichotomy, this would imply that the basic procedures of referential communication are acquired at a very early age and that subsequent advances come from gradual additions to the components of substantive knowledge and enabling skills.

Clearly, substantive knowledge and enabling skills are important to communicative competence and usually increase with age. However, the characteristic errors made by preschoolers on referential communication tasks implicate age-bound deficiencies in procedural knowledge as well. Consider that a 5-year-old will describe a referent as "the red one" when there is another red object immediately adjacent (Whitehurst, 1976). And, in the same situation, a 5-year-old who hears the message, "the red one," will pick one of the red objects without asking which one (Ironsmith & Whitehurst, 1978). There is no doubt, here, that the children have substantive knowledge of the differences in the objects being described and that they have the vocabulary to enable them to produce informative messages and detect ambiguous ones (Whitehurst & Sonnenschein, 1981). But, they do not.

Much of our research program, including the present study, has been directed towards understanding the nature of the young child's deficiencies in procedural knowledge about communication. We have demonstrated what we believe to be one critical deficiency: Preschoolers do not realize the importance of describing the differences between a referent and the surrounding events with which it might be confused. Initially we thought that this failure to describe differences was a result of a deficiency in the perceptual enabling skill of contrasting referents with nonreferents (Whitehurst & Sonnenschein, 1978). However, subsequent research (Whitehurst &

Sonnenschein, 1981) demonstrated that the deficit was a procedural one. Preschoolers told to describe an object so that a listener would know which one they are talking about are as likely to describe ambiguous dimensions of the object as distinctive elements. The same task is performed to perfection, however, if the children are told to tell the listener how an object is different from other objects.

We have utilized this "difference rule" in the development of an effective training program. Children are initially told that they will be playing a communication game in which they are the speaker and are instructed that they must describe thhe referent so that thhe listener can distinguish it from the nonreferents. Each child is then given feedback during the task such that ambiguous messages are followed by a statement indicating that the child has made a mistake because he has not described a difference, and informative messages are followed by a statement that the child has done a good job because he has described a difference. This feedback procedure is strikingly effective in teaching 5-year-olds to produce informative messages. It is also more effective than instructing the children, prior to beginning the task, of the need to differentiate referents from nonreferents. The effect is specifically due to the content of the difference rule. Merely telling children "That's right" or "That's wrong" is not effective. The difference rule training transfers to other materials not involved in training, the increments in performance endure on follow-up testing, and the same procedures work with 4-year-olds, a younger group than previously involved in the training of communication skills (Whitehurst & Sonnenschein, 1981). However, the results do not transfer to a listening task. Children who successfully

produce informative messages on a speaking task do not subsequently as listeners appear to recognize that there is anything wrong with an ambiguous message (Whitehurst & Sonnenschein, 1981). We have explored this finding by training children on a listening task and testing transfer to speaking as well as training on speaking and testing on listening. A comparable feedback procedure stressing the difference rule is equally effective in training speakers to speak informatively and listeners to detect ambiguity, but it does not transfer across modes, suggesting that although the same rule may be applicable in the two modes, young children are unaware of this (Sonnenschein & Whitehurst, 1983). Another recent attempt to train referential communication skills by focusing on comparison skills also showed task specific success but limited transfer (Asher & Wigfield, 1981).

The limits on success of training on the difference rule suggest that there are additional procedural rules of communication which may not be understood by the preschool child. The hypothesis to be tested in the present experiment is that the preschooler does not understand role coordination. Role coordination involves knowledge that certain of the rules which govern one's own performance as a speaker should be applied when one is listening, and likewise, certain of the rules which govern one's own performance as a listener should be applied when one is speaking. Not all rules applicable to speaking performance are necessarily applicable to listening performance (Higgins, Fondacaro, & McCann, 1981). However, the success of difference rule training in either the speaking or the listening modes in the Sonnenschein and Whitehurst (1983) study indicates that awareness that an informative message must differentiate referent from nonreferents is applicable in both modalities.

Several studies have demonstrated that very young children can modify their speech to take into account changing listener perspectives (e.g., Maratsos, 1973; Menig-Peterson, 1975; Shatz & Gelman, 1973). But this type of perspective-taking in which the child responds to characteristics of different listeners is conceptually distinct from the child's ability to relate his own and others' dual roles as speakers and listeners. Imagine, for example, a 5-year-old child who has learned to shorten and simplify her messages to her 2-year-old brother, but who thinks that she is at fault when she does not understand a too long and too complex instruction to her from her kindergarten teacher. The child has learned to apply the "be simple" rule to her own speech to younger people (perspective-taking), but does not recognize the relevance of the rule to speech directed towards her (role-coordination). Role coordination suggests the ability to unify the experience of critic and performer, speaker and listener. Not understanding the relation between complementary roles such as speaker and listener limits the child's ability to profit from experience that is gained in one role but not the other.

Our hypothesis about the importance of role coordination may call to mind several unsuccessful attempts to improve children's communication through the use of role-switching experience (Chandler, Greenspan & Barenboim, 1974; Frey, 1966, 1969; Shantz & Wilson, 1972). It would appear that if our hypothesis is correct, role switching should have taught the child to coordinate the speaker's and listener's roles and therefore the previous role-switching studies should have been more successful. Various attempts to train communication skills through role-switching techniques have been so unsuccessful, in fact, that Shantz (1981), after reviewing this literature,

concludes that "role reversal does not appear to be an important aspect of a successful training program" (p. 99).

Shantz's conclusion may be premature, however. Role coordination cannot occur unless the child knows or is taught something in one role that is then available to be coordinated with the other role.

Our specific hypothesis is that role-switching (one way of fostering role coordination, we believe) will enhance transfer of speaking experience to listening or vice-versa <u>if</u> the child is taught the difference rule as part of his speaking or listening experience. Difference rule training alone should be successful intramodally but not cross-modally. Role-switching alone should have no effects.

Our design for testing these hypotheses involves orthogonal variation of how many role-switching episodes children receive, and whether they receive difference rule feedback training in the speaking mode, the listening mode, or not at all. In our previous studies children actually received one role-switching episode: They were trained in one mode and immediately tested in the other. Given the previous results, one role-switching episode is apparently not sufficient for the young child to realize the comparability between speaking and listening vis-a-vis the need for messages to differentiate referent from nonreferents. Nor would we expect it to be. Only through experiencing several consecutive role-switching episodes would we expect a child to realize the comparability of requirements in the two modalities.

If our hypothesis is correct, we would expect to find a significant interaction between feedback training, role switching, and task mode such that

one could only predict performance by knowing the mode in which the child was being tested, the mode in which the child received feedback training on the difference rule, and how many role-switching episodes the child had experienced (one vs. three). We have an additional interest but no predictions in whether any effects of role-switching and difference rule training might transfer to the child's ability to assign responsibility for communicative outcomes in a situation in which the child is neither an active speaker or listener, but a neutral observer (Robinson & Robinson, 1977). Such a situation allows a test of a child's ability to extend role coordination from complementary roles involving the self to the same complementary roles involving others but not oneself.

Method

Subjects

Sixty kindergartners (M = 5 years, 10 months) from two private schools in suburban Washington, D.C., participated in this study. There were an eual number of boys and girls in each group.

Task

The task used in Session I was the same as that used in Whitehurst and Sonnenschein (1978, complex-contrast condition; 1981). There were a total of 20 trials, 10 for speaking and 10 for listening. Each trial had two triangles, constructed by combining three two-valued dimensions of color, size, and pattern. Each pair of triangles differed on only one dimension while sharing the values of the other two dimensions. One third of the trials required a size discrimination, one third a pattern discrimination, and one third a color discrimination. The order was randomly arranged. The triangle

pairs were mounted on 8 x 11 inch paper and inserted in a looseleaf notebook. One of the triangles in each pair, the referent, had a star above it. A flap hid the location of the star.

The transfer task used in Session II had been used in Whitehurst and Sonnenschein (1981) and was identical to that used in Session I except that the stimuli were pictures found in children's coloring books rather than triangles. On each trial the stimuli differed on only one dimension while sharing the values of the other two dimensions. This set of stimuli was also used for the evaluation task.

Procedure

Each child was tested individually, two times, one week apart, by a female adult experimenter. Testing took place in a quiet room within the school. During Session I, this room had a table and three chairs in it. One chair was for the experimenter and two for the subject. One of the subject's chairs had a line drawing of a child in the act of speaking attached to it. The other subject's chair had a similar drawing of a listener attached to it. The subject sat on one of these two chairs, depending upon which task he or she was performing at the time. During Session II, there was only one chair (no picture attached) provided for the subject.

During Session I, each child was told that he or she was going to play a communication game with Jessica who was a kindergartner at another school. The child was shown a picture of Jessica and heard a tape-recording of Jessica introducing herself and requesting that the child play a game with her.

Each child was assigned to one of six groups in a 3(listening feedback vs. no feedback) x 2(interspersed vs. separated listening and speaking trials)

crossed design. Regardless of group assignment, each child ultimately received a total of 10 speaking and 10 listening trials. On the listening trials, the child heard a tape-recording of Jessica's messages. Half of Jessica's messages were one-word informative (described only the referent) and half were one-word ambiguous (described both the referent and the nonreferent). The order of informative and ambiguous trials was randomized. On the speaking trials, the child gave the messages and was told that these would later on be presented to Jessica.

In the groups in which speaking and listening trials were interspersed, children alternated between the speaking task for five trials and the listening task for five trials for a total of 20 trials. Children who began the sequence with speaking trials were told "You have to tell Jessica something about the triangle with the star above it so that when I later on tell her what you said she will be able to pick it out." Two practice trials followed in which the child was told whether he was right or wrong.

After five speaker feedback trials the child was told, "Now we're going to switch what Jessica and you have to do in this game. You are now going to do what Jessica was doing; you are now going to be the listener. So go sit in the chair that shows the person listening. Remember, Jessica is now going to do what you were doing. If she does a good job and describes only one picture, point to it. If she does a bad job and describes more than one picture, then point to this button." The child received two practice trials with feedback only on correctness. After the practice trials and the five listening trials the child was told "Okay it's time to switch sides again. You are now going to be the speaker again. So go back to the chair with the

person speaking on it. Now do what you were doing before when you were the speaker." After five speaking feedback trials, the child was instructed to "switch sides" one more time for the listening task. Again there was no feedback on the listening task.

Children who began the sequence with listening trials had a related progression. The first instructions were: "Jessica is going to tell you something about the triangle with the star above it so you can pick it out. If she does a good job and describes only one triangle, then point to it. If she does a bad job and describes more than one triangle, then point to this button." After practice trials and the first five listening trials, the child was told "Now we're going to switch what Jessica and you have to do in this game. You are now going to be the speaker. So go sit in the chair that shows the person speaking. Remember Jessica is now going to do what you were doing. You must now tell Jessica something about the triangle with the star above it so that when I later on tell her what you said she will be able to pick it out." The child "switched sides" two more times as described previously.

The groups in which speaking and listening trials were separated had a treatment identical to that described for the interspersed groups, except that only one switch (after the completion of the tenth trial) occurred between the speaking and listening trials. Children receiving listening feedback always began the sequence of 20 trials with listening trials. On informative trials when the child selected the referent or on ambiguous trials when the child pointed to to the button, he or she was told "That's right. Jessica told you (did not tell you) how the one with the star was different from the other one so you were able to pick it out without guessing (so you had to point to the

button). On ambiguous trials where the child did not point to the button, he or she was told "That's wrong. Jessica did not tell you how the one with the star was different from the other one. You must have been guessing." In the few instances where a child failed to select a referent on an informative trial, he or she was told "That's wrong. You did not pick the one with the star above it even though Jessica told you how it was different from the other one." Children receiving listening feedback had no feedback on speaking trials.

Children receiving speaking feedback always began the sequence of 20 trials with speaking trials. On trials where the child gave an informative message (distinguished referent from nonreferent), he or she was told "That's right. You told how the one with the star above it was different from the other one." On trials where the child gave an ambiguous message (failed to distinguish referent from nonreferent), he or she was told "That's wrong. You did not tell how the one with the star above it was different from the other one." Children receiving speaking feedback had no feedback on listening trials.

Children in the no feedback groups were assigned randomly to begin the sequence of 20 trials with speaking or listening trials. They received no feedback on their responses, except the simple feedback on correctness on the four practice trials. Half the children switched tasks only after the completion of the tenth trial (Separated); the other children alternated every five trials (Interspersed).

A week after Session 1, each child received a 10 trial speaking task, a 10 trial listening task, and a 20 trial evaluation task. For half the children

the order was speaking, listening, evaluation. For the remaining children the order was listening, speaking, evaluation. Session II began with all children being told that they would now play two games, similar to the ones played previously, this time with Keith who was a kindergartner at another school. The children were shown pictures of Keith. Preliminary instructions for speaking and listening were like those in Session I. On the listening task, children heard a tape recording of Keith giving either one-word informative or one-word ambiguous messages. They had to respond to the informativeness of Keith's messages in the same manner as in Session I. On the speaking task, they had to describe the referent stimuli so that, later, Keith would be able to pick out the objects they had described. Children received no feedback on either the speaking or the listening tasks.

After completing these two tasks, children performed an evaluation task which was modeled after research by Robinson and Robinson (1977). Children were told that they would now play a game with Bugs Bunny and Daffy Duck. Bugs, the speaker doll, was going to tell Daffy, the listener doll, about "the picture with the star above it so that Daffy could pick it out." The child was "to watch carefully and tell whether Bugs did a good job." (the roles of speaker and listener dolls were reversed for half the children.) On half the trials the speaker doll gave one-word informative messages and on half he gave one-word ambiguous messages. On half the trials, the listener doll selected the referent and on half the trials, the nonreferent. These four possibilities were combined orthogonally. The order of the resulting trials was randomized. After the listener doll made a selection, the flap which hid the star indicating the referent was lifted. The child was then told "Daffy

(or Bugs) picked the one with (without) the star. It went right (wrong) that time. Did Bugs (or Daffy) tell properly which one to pick?" In cases where the speaker doll's message was ambiguous and the listener doll had selected a nonreferent, the child was also asked "Whose fault was it that Daffy (or Bugs) picked the one without the star?" Children received no feedback as to the accuracy of their responses.

Results

The dependent variable on each task was the number of correct responses. On the speaking tasks a correct response was an informative message. On the listening tasks, a correct response was selecting the referent on informative trials and selecting the button on ambiguous trials. On the evaluation task, a correct response was detecting whether the speaker had told properly how to pick the referent (yes on informative trials, no on ambiguous ones regardless of how the listener responded) and blaming the speaker when the listener made an error after an ambiguous message (although a communication failure can be due to deficiencies on the parts of both speaker and listener, in this task the fault was clearly the speaker's).

Preliminary analyses revealed no effects for gender, school attended, or order of task presentation in Session II ($p > .10$). These factors are not considered in subsequent analyses.

The two between-subjects variables, feedback and presentation method, were combined with the two within-subjects variables, task and session, in a 3(feedback: listening, speaking, or none) x 2(presentation method: interspersed or separated) x 2(task: speaking or listening) x 2(session: I or II) ANOVA, with number of correct responses as the dependent variable. There

were significant main effects for feedback ($F(2,54) = 44.33$, $p < .01$), presentation method ($F(1,54) = 9.40$, $p < .01$), and session ($F(1,54) = 21.70$, $p < .01$), but not for task. Only one two-way interaction was significant, feedback x task ($F(2,54) = 26.75$, $p < .01$). Only one three-way interaction was significant, that for feedback x presentation method x task ($F(2,54) = 19.43$, $p < .01$). The four-way interaction was not significant.

Insert Table 1 about here

Table 1 presents the mean proportion of correct responses from the 24 subgroups involved in the four-way ANOVA reported above. The main effects for feedback, presentation method, and session can be derived from this table. For feedback, speaking feedback (.88 correct) and listening feedback (.83 correct) were both better than no feedback (.60 correct). For presentation method, interspersed speaking and listening trials (.81 correct) were better than separated speaking and listening trials (.73 correct), and for sessions, session II (.80 correct) was better than session I (.73 correct). Only the session effect can be interpreted straightforwardly since it does not enter into any higher order interactions. It demonstrates that the effects produced by the training conditions in Session I were still present one week later. The overall increase in performance is likely due to the more naturalistic stimuli used in Session II.

Insert Figure 1 about here

The significant main effects for feedback and presentation method can best be interpreted with respect to their significant interaction with the task variable. The interpretation of these main effects and the two-way interaction of feedback and task is subsumed in the three-way interaction of feedback, presentation method, and task. Figure 1 displays this interaction graphically. In Figure 1, the statistically similar no feedback groups have been collapsed across presentation methods, and the statistically similar speaker and listener feedback groups have been collapsed across the interspersed conditions in order to simplify graphic interpretation of the interaction. Figure 1 indicates that when children receive separated speaking and listening experiences, the effect of feedback is limited to either the speaking or listening mode in which it is presented. However, when the child receives interspersed listening and speaking experiences, the effect of feedback in one mode transfers to the other.

Insert Table 2 about here

The results from the evaluation test are found in Table 2. The first four columns represent the mean proportion of correct responses to the question of whether the speaker told properly which one to pick, categorized according to whether the speaker's message was informative or ambiguous and whether the listener's response was to pick the correct referent or the incorrect one. The fifth column provides the additional data on whether the child correctly blamed the speaker on trials consisting of an ambiguous message by the speaker and a wrong choice by the listener.

These data were summed to provide a total correct score for each subject, and subjected to a 3 x 2 ANOVA for the variables of feedback and presentation method. Data from the trials on which the speaker was informative and the listener chose correctly were discarded for the purpose of this analysis since all subjects in all groups were uniformly correct. Results of the analysis were a significant main effect for feedback ($F(2,54) = 7.37$, $p < .01$), and a significant interaction between feedback and presentation method ($F(2,54) = 3.38$, $p < .05$). The main effect for presentation approached significance ($F(1,54) = 3.18$, $p < .10$). The main effect for feedback is due to both listener feedback (.53) and speaker feedback (.51) producing better results than no feedback (.32). The interaction is attributable to speaker feedback being much more effective in the interspersed (.65) as compared with the separated condition (.37), while there was no such difference when listener feedback was given in the interspersed (.51) vs. separated (.54) conditions.

Discussion

We hypothesized that two procedural deficiencies underlie the failure of most preschoolers to produce informative referential communications or to understand that ambiguous communications directed towards them are faulty. One is a failure to understand the difference rule: an informative message should describe the difference between a referent and other similar events with which it may be confused. The other is role-coordination: the roles of speaker and listener are complementary--experience gained in one mode is relevant to performance in the other. Our results strongly support the involvement of both these rule deficiencies in preschoolers' referential communication.

Difference rule training increased performance substantially on tasks in the same modality in which training occurred, but not on tasks that involved crossing from the mode in which training occurred into the complementary mode. This finding is shown by the feedback, separated conditions producing very good performance in the same mode as training (X = .95) compared with the no feedback, separated control group (X = .59). The difference between the control group and the feedback separated groups is minimal, however, when assessed in the opposite mode from training (X = .59 vs. X = .64; data derived from Table 1). These results are comparable to those in Sonnenschein and Whitehurst (1983) and Whitehurst and Sonnenschein (1981).

Role coordination, experienced through alternating several times between speaking and listening tasks, had no effect in the absence of difference rule training (No feedback, interspersed X = .61, No feedback, separated X = .58). Presumably the children learned nothing in either mode and hence had nothing to coordinate across modes when role-switching. The effects of the role-switching experience were activated when combined with difference rule training, as witness the performance of the feedback, interspersed groups when tested in the opposite mode from feedback training (X = .89). This is very close to the performance level of these groups when tested in the same mode as training (X = .93) and much higher than the feedback, separated groups when tested in the nontrained mode (X = .64).

Our finding that cross-modal transfer of training on the difference rule is mediated by role-switching experience has important implications for understanding the development of referential communication. It seems clear from this and previous research that preschoolers lack specific procedural knowledge about communication.

There have been two general approaches to characterizing age-related deficiencies in procedural knowledge of communication. The older approach derives from Piaget's (1926) emphasis on egocentrism (e.g., Flavell, Botkin, Fry, Wright, & Jarvis, 1968). Deficiencies in referential communication have been conceptualized in this approach as deriving from a more general deficiency of the preoperational child in perspective-taking, described metaphorically as "seeing the world through another's eyes." Egocentrism would be expected to limit the child's performance on a variety of tasks in addition to referential communication and to be eliminatd only through a broad reorganization of the child's cognitive structures. The Piagetian approach, with its emphasis on egocentrism and perspecive-taking, has come under heavy attack (Asher, 1979; Glucksberg, Krauss & Higgins, 1975) for among other reasons, the low intercorrelations between various measures of perspective-taking (cf. Rubin, 1973; Shantz, 1981).

A recent alternative to the perspective-taking approach has emphasized a more specific task analysis of the skills that are particular to referential communication. Most work done from this perspective has pointed to the deficiency in the child's knowledge about the importance of comparative information in messages, what we have called the difference rule (Asher & Wigfield, 1981; Robinson, 1981a, b; Whitehurst & Sonnenschein, 1981).

Our present results suggest the necessity for integrating certain aspects of the perspective-taking approach into the task analysis approach that has until now focused on the difference-rule. Role-switching, a training procedure favored by advocates of the perspective-taking approach, can be quite powerful when combined with specific informational feedback of the type

suggested by the difference rule. We believe, however, that it might be a mistake to conceptualize the procedure of role-swiching as teaching the child perspective-taking, i.e., to make inferences about the listener's actions from the speaker's role and vice-versa. It would be more parsimonious to conclude that role-switching teaches the child that two experiences that may otherwise seem disjoint are, in fact, similar or complementary. This is more akin to forming a concept or learning set than the multistep, inferential process that some theorists (e.g., Higgins, 1981) see as the critical characteristic of perspective-taking. As one commentator has noted, "all researchers of perspective taking... tend to ignore the likely possibility that a great deal of interpersonal understanding may be achieved, perhaps more directly and more easily, through learning about social norms, rules of social interaction, and social causation" (Shultz, 1982, p. 559).

We would add that many of these rules and norms may be quite task specific due either to different task requirements (Higgins et al., 1981) or to children being unaware of the comparability in the requirements for different tasks. This is shown in the present research by the results of the evaluation task. Positive effects of training were evident on this task, but it is remarkable that children who are near asymptote in their ability to produce informative messages and recognize and correct ambiguous messages directed towards them are incorrect nearly half the time or more in judging the efficacy of ambiguous communicative interactions in which they do not participate. It is as if the children see the evaluation task as a different game from their own speaking and listening, just as they see their own speaking as different from their own listening until the role-switching

experience integrates them. There seems to be no Santa Claus in transfer of training.

In sum, role-switching is an inert experience in referential communication until it is combined with specific instruction on the nature of informative messages, then it produces powerful transfer of learning to the untrained role. The practical implications of this very effective training package are obvious. By determining the cause(s) of young children's communicative deficits, educators will be able to develop programs, based on our successful training technique, to correct these deficits. The theoretical challenge is to understand the generality of role- switching experience and its place in the hierarchy of procedural knowledge we must possess in order to be comprehensible and know when others are not.

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Table 1

Mean proportion of correct responses
on speaking and listening tasks

	Time 1		Time 2	
	Speaking	Listening	Speaking	Listening
Feedback				
Interspersed listening	.80	.83	.88	.99
Interspersed speaking	.94	.90	.95	.98
Separated listening	.55	.89	.68	1.00
Separated speaking	.90	.66	1.00	.68
No feedback controls				
Interspersed	.62	.58	.63	.58
Separated	.47	.66	.56	.68

Table 2

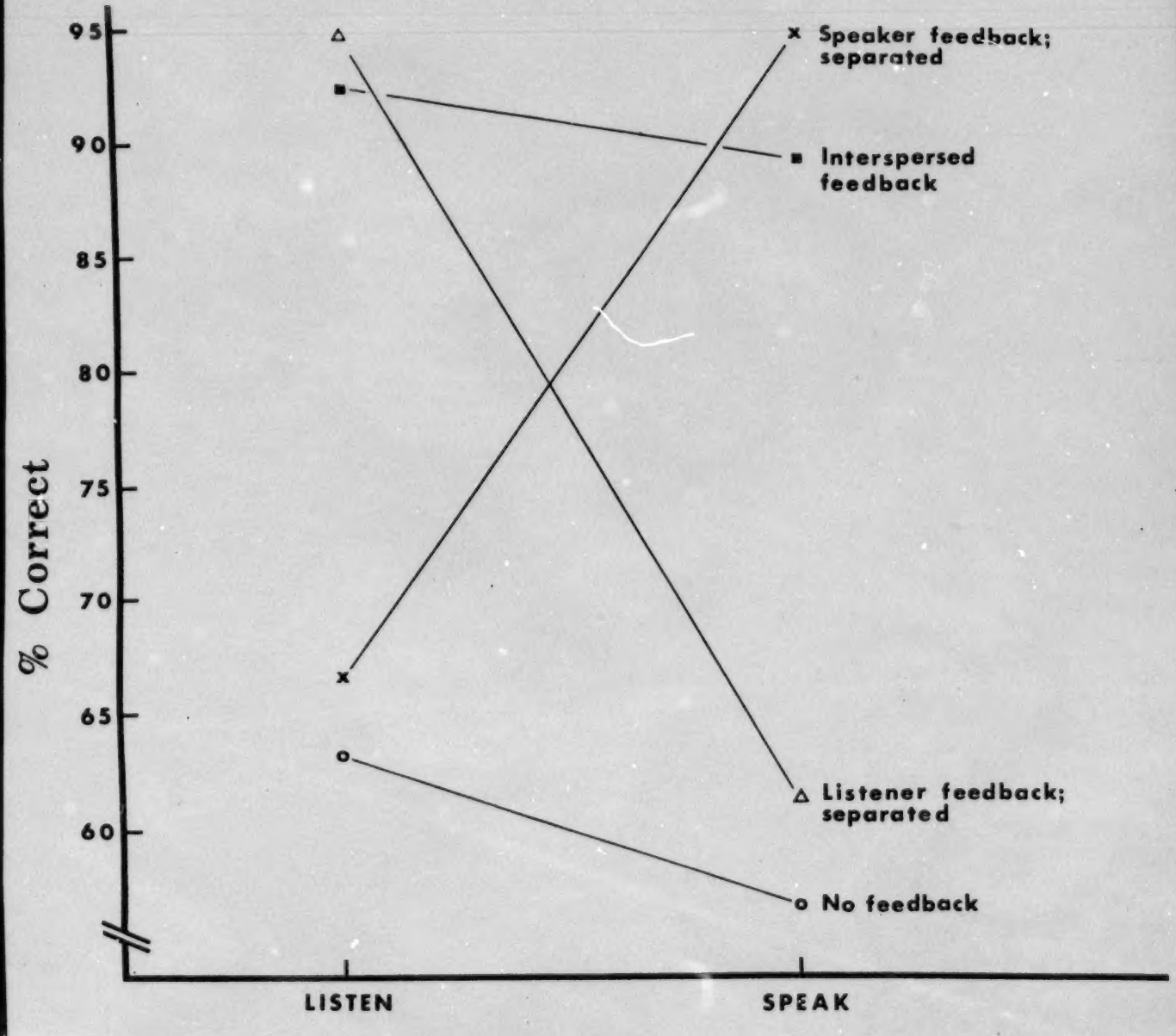
Mean proportion of correct responses

on evaluation task

	Speaker's Message/Listener Selection				
	Inform/ Correct	Ambig/ Correct	Inform/ Incorrect	Ambig/ Incorrect	Blame Speaker*
Feedback					
Interspersed listening	1.00	.36	.80	.58	.32
Interspersed speaking	1.00	.50	.88	.66	.56
Separated listening	1.00	.34	.84	.60	.36
Separated speaking	1.00	.18	.90	.30	.10
No feedback controls					
Interspersed	1.00	.10	.68	.32	.22
Separated	1.00	.02	.68	.42	.12

*Proportion of children blaming speaker when message was ambiguous and the listener selected the nonreferent.

Figure 1. The percentage of correct responses as a function of type of feedback and presentation method.


95
90
85
80
75
70
65
60
% Correct
Speaker feedback; separated
Interspersed feedback
Listener feedback; separated
No feedback
LISTEN
SPEAK
Mode